

Human Computer Interaction CS449 – CS549

Week 6-1

Psychology of HCI - cont

KÜRŞAT ÇAĞILTAY

Today

- Continue with Intro to Psychology of HCI
- Memory- Long Term, Short Term
- Attention
- Experiments
- New Assignment

▼ Week-6: Beyond usability engineering Understanding the user (part 2) Perception



FILE

Visual Interface Design and psychology Ch12 - Designing User Experience-Benyon 



FILE

Memory Attention Ch21 - Designing User Experience-Benyon 

Assignment-5 Groups



CS449_549 Project Groups 2024Fall



File Edit View Insert Format Data Tools Extensions Help



100% ▾



123

Defaul... ▾



9



B

I



A



D120 ▾



A

B

C

D

E

1

This is the form for Assignment-5 project groups. This group will also work on Assignment-6

2

If you want you may continue to work on Term project with the same group.

3

Name

Last Name

e-mail

are you a 449 or 549 student

4

Group-1

Your current assignment

- Evaluation of two interfaces by Cognitive modeling
- We will have a demo on Tuesday

CS449_549-202401 Human Computer Interaction Assignment-3 Cognitive Modeling in HCI (Due November 17)

Opened: Thursday, 24 October 2024, 8:09 PM

Due: Sunday, 17 November 2024, 11:59 PM

This is your 3rd assignment - Compare two music sites by cognitive modeling. Due date November 17th



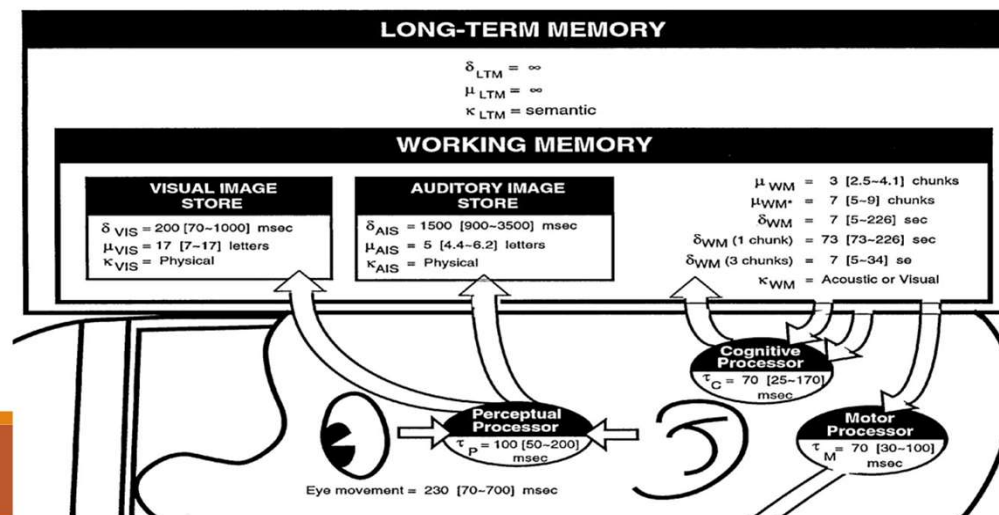
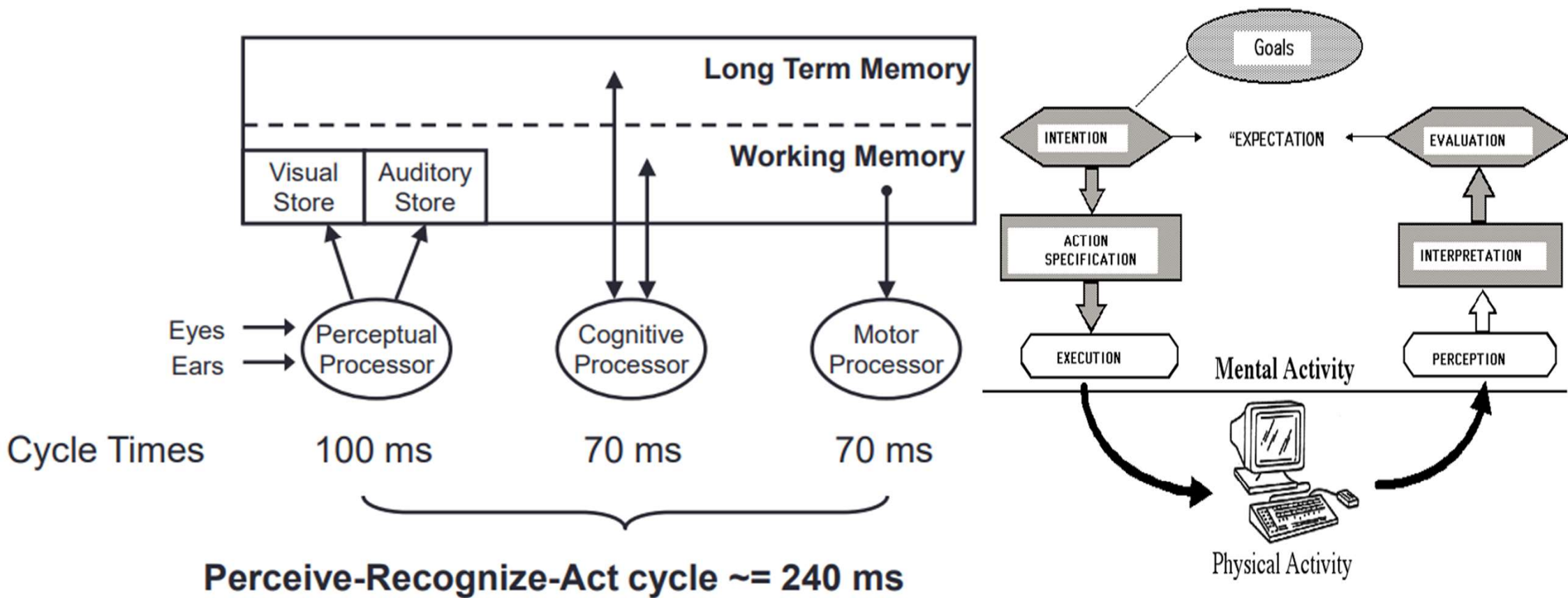
Cogtool Homework 2024_fall....



cogtool homework images fall...



CogToolUserGuide_1_2 2.pdf



LONG-TERM MEMORY

$$\delta_{LTM} = \infty$$

$$\mu_{LTM} = \infty$$

$$\kappa_{LTM} = \text{semantic}$$

WORKING MEMORY

VISUAL IMAGE STORE

$\delta_{VIS} = 200$ [70~1000] msec
 $\mu_{VIS} = 17$ [7~17] letters
 $\kappa_{VIS} = \text{Physical}$

AUDITORY IMAGE STORE

$\delta_{AIS} = 1500$ [900~3500] msec
 $\mu_{AIS} = 5$ [4.4~6.2] letters
 $\kappa_{AIS} = \text{Physical}$

$\mu_{WM} = 3$ [2.5~4.1] chunks

$\mu_{WM^*} = 7$ [5~9] chunks

$\delta_{WM} = 7$ [5~226] sec

$\delta_{WM} (1 \text{ chunk}) = 73$ [73~226] sec

$\delta_{WM} (3 \text{ chunks}) = 7$ [5~34] se

$\kappa_{WM} = \text{Acoustic or Visual}$

YES NO
 



Eye movement = 230 [70~700] msec

Perceptual Processor

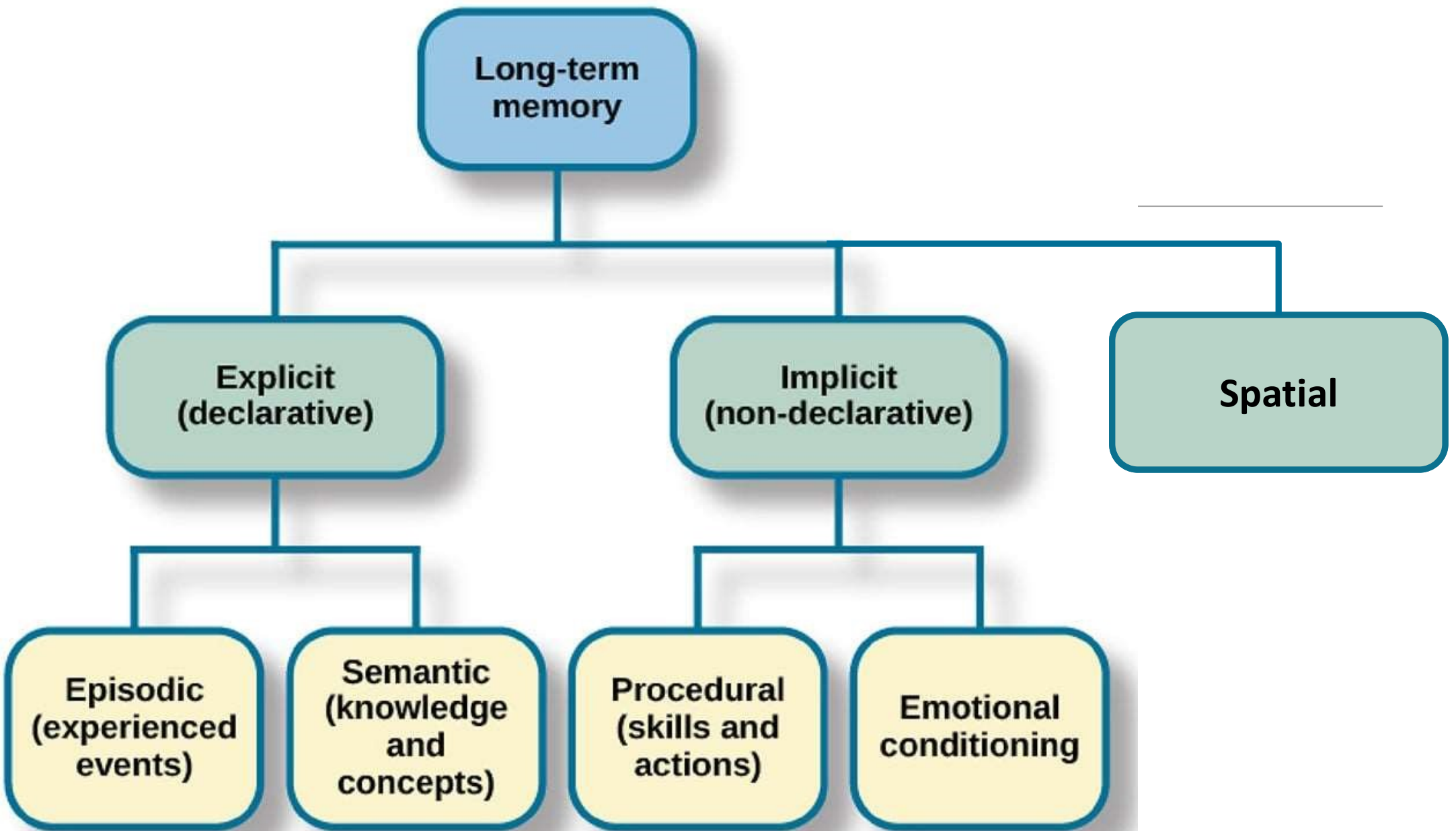
$\tau_P = 100$ [50~200] msec

Cognitive Processor

$\tau_C = 70$ [25~170] msec

Motor Processor

$\tau_M = 70$ [30~100] msec



Long Term Memory

- Explicit/Declarative:
 - Episodic: information about events in time (Shopping site experience)
 - Semantic: knowledge about the external world (recognizing different icons)
- Implicit/procedural:
 - Procedural: information about how to use objects and how to do things
 - Emotional
- Spatial: ability to recall the spatial relationships between objects or locations (Location of shopping basket)

Which memory ?

hepsiburada
Premium'u keşfet

Siparişlerim

Süper Fiyat, Süper Teklif

Yurt Dışından

Kampanyalar

Girişimci Ka



Ürün, kategori veya marka ara

ARA



Kc
Sal

Elektronik

Moda

Ev, Yaşam,
Kırtasiye, Ofis

Oto, Bahçe, Yapı
Market

Anne, Bebek,
Oyuncak

Spor,
Outdoor

Son gezdiğin ürünler



Biomak Akü Kablosu 1.
Kalite 1200 Amper Kolay...

★★★★★ 12

599,98 TL



Peşin
fiyatına
3 ay ertele
6 taksitle
öde*

Krediyle 36 Taksit
Ryobi RY18PW22A-140
18V 4AH Akülü Basınçlı...

★★★★★ 11

8.499,00 TL



Peşin
fiyatına
3 ay ertele
6 taksitle
öde*

Meta Quest 3 Elit Kayış -
Batarya ile Gelmektedir.

13.223,68 TL



Garmin Fenix 3 / Fenix 3
HR / Fenix 3 Sapphire...

★★★★★ 1

300,00 TL

Sepete ekle



Microsonic Garmin Fenix 3
Kordon Quick Fit Strap...

★★★★★ 2

499,90 TL

5 Aİ 4 Öde

Can an interface design kill a person?

- Whose fault?
- Interactive system designer?
- User?

The Interface that Killed Jenny

- Under cancer treatment
- After the medicine was administered,
 - the nurses were to be responsible for entering all the required information into the charting software and
 - using this software to follow up on the patient's status and
 - make interventions
- They missed the critical information about her three-day hydration requirements
- The day after her treatment, Jenny died of toxicity and dehydration

- Interface that Killed Jenny

Epic Hyperspace - Production - DUBLIN PEDIATRICS

Desktop Action Patient Care Referrals Reports Tools Weblinks Help

Back Fwd Home Schedule In Basket Chart Encounter Tel Enc Refill Orders Only Staff Msg Sec Pt Msg Print Secure Log Out

Epic Home Zztest, Ad

Zztest, Ad MRN: 18774711 DOB: 4/15/1950 Age: 60 yea Sex: M Allergies: No Known Allergies PCP: PCP, NO Type: (None)* PHS: * BX35, HN35 Online: Basic Alerts: **HM**

Snapshot ADVANCE DIRECTIVE/CODE STATUS Report Snapshot

Demographics

AD ZZTEST 123 Easy St
60 year old male Xxx, XX 99999
Home: 999-999-9999

Problem List Chronic

ESOPHAGEAL REFLUX
Other
ASTHMA NOS W/O STATUS ASTHMA
ESSENTIAL HYPERTENSION NOS
ERRONEOUS ENCOUNTER

Health Maintenance Overdue Due On Due Soon

CREATININE	04/15/1950
INFLUENZA VACCINE	09/01/2010
LIPID SCREENING	04/15/1985
PNEUMOCOCCAL VACCINE (PNEUMOVAX)	04/15/1952
POTASSIUM	04/15/1950
TDAP VACCINE	04/15/1961
UNIVERSAL HIV SCREENING DISCUSSION	04/15/1963
VARICELLA ZOSTER VACCINE (ZOSTAVAX)	04/15/2010
COLORECTAL CANCER SCREENING DISCUSSION	08/02/2011

Reminders and Results

None

Allergies

No Known Allergies

Medications Long-Term

PREVPAC Pack
lisinopril (PRINML, ZESTRIL) 10mg Tab
tramadol (ULTRAM) 50mg Tab
fluticasone (FLONASE) 50mcg Nasal Susp
PREVPAC (PREVPAC) Pack
ranitidine (ZANTAC) 300mg Tab

Immunizations/Injections

None

Significant History/Details

Tobacco: Not on File
Alcohol: Not on File
3 open orders
Language: UNKNOWN

Specialty Comments Report Show All Edit

No comments regarding your specialty

Family Comments Edit

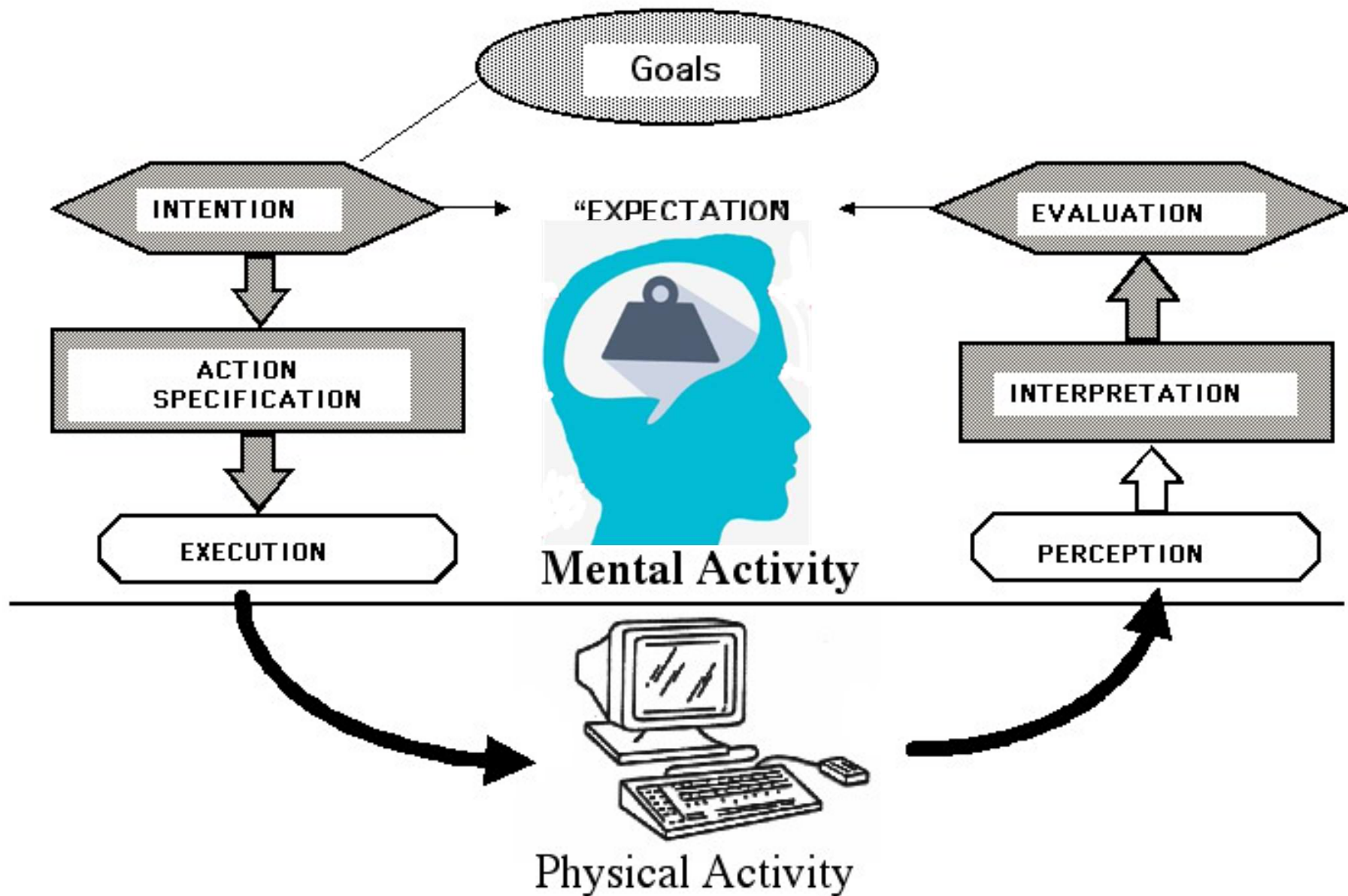
None

JODIM CC'd Charts, CC'd Results, Result Notes, Results, Addendum, Charts CC'd To Me, Expiring Ord, Open Charts, 9:54 AM

Start Epic Hyperspace - Product... Microsoft PowerPoint - [...]

Why

- it's impossible to scan for critical information quickly
- colors distracting, prevent any critical information from being highlighted
- any critical treatment or drug information should receive special treatment
- recording the information after each visit, known as “charting,” requires too much time and attention to complete in a timely manner



Seven stages of user activities involved in task performance
Don Norman *The Design of Everyday Things*.

Model Human Processor Limitations

- **Processors**
 - Perceptual-100ms
 - Cognitive- 70 ms
 - Motor- 70 ms
- **Visual Image Store**
 - Keeps 200 ms
 - 17 items
- **Auditory Image Store**
 - Keeps 1500ms
 - 5 items
- **Working Memory**
 - Capacity 7+/-2
 - 7 sec

Decreasing Working Memory Load



[ON/OFF TIMER operation]
① Press [ON TIMER] or [OFF TIMER] button.
② Press [▲▼] button to select desired time.
③ Press [SET] button to set ON/OFF timer.
In ON TIMER operation, please select desired temperature and fan speed.

[SLEEP TIMER operation]
① Press [SLEEP] button to select desired time.
② Press [CANCEL] button to cancel timer.

[WEEKLY TIMER operation]
① Press [P/W] button, shift setting mode.
② Please select desired setting.
③ Press [P/W] button to complete the setting.
④ Press [WEEKLY] button to activate weekly timer.
⑤ Press [WEEKLY] button again to deactivate.
Please see INSTRUCTION MANUAL for further details.

Recognition over Recall

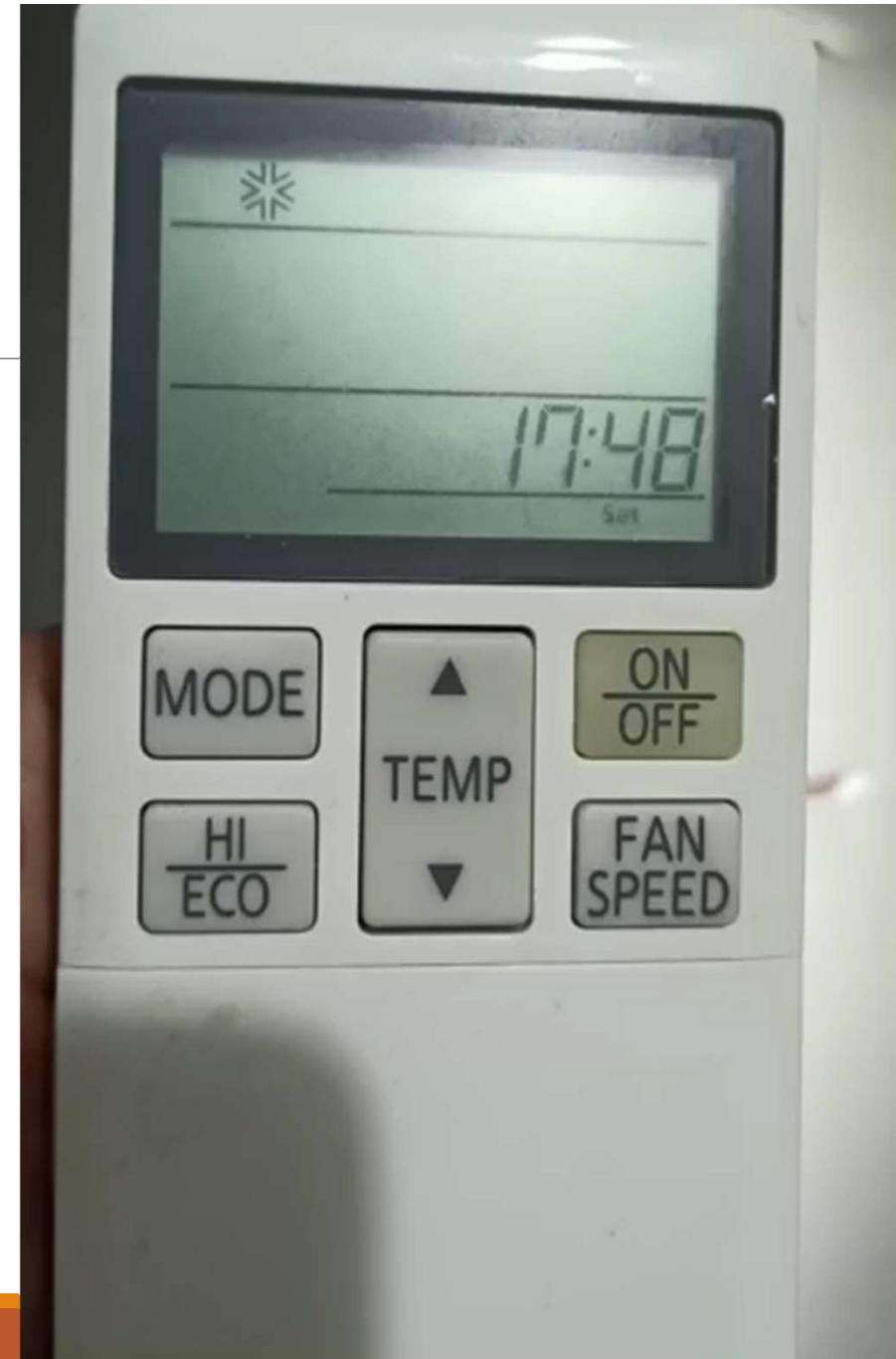
Cognitive Process

Which mode is used in summer?

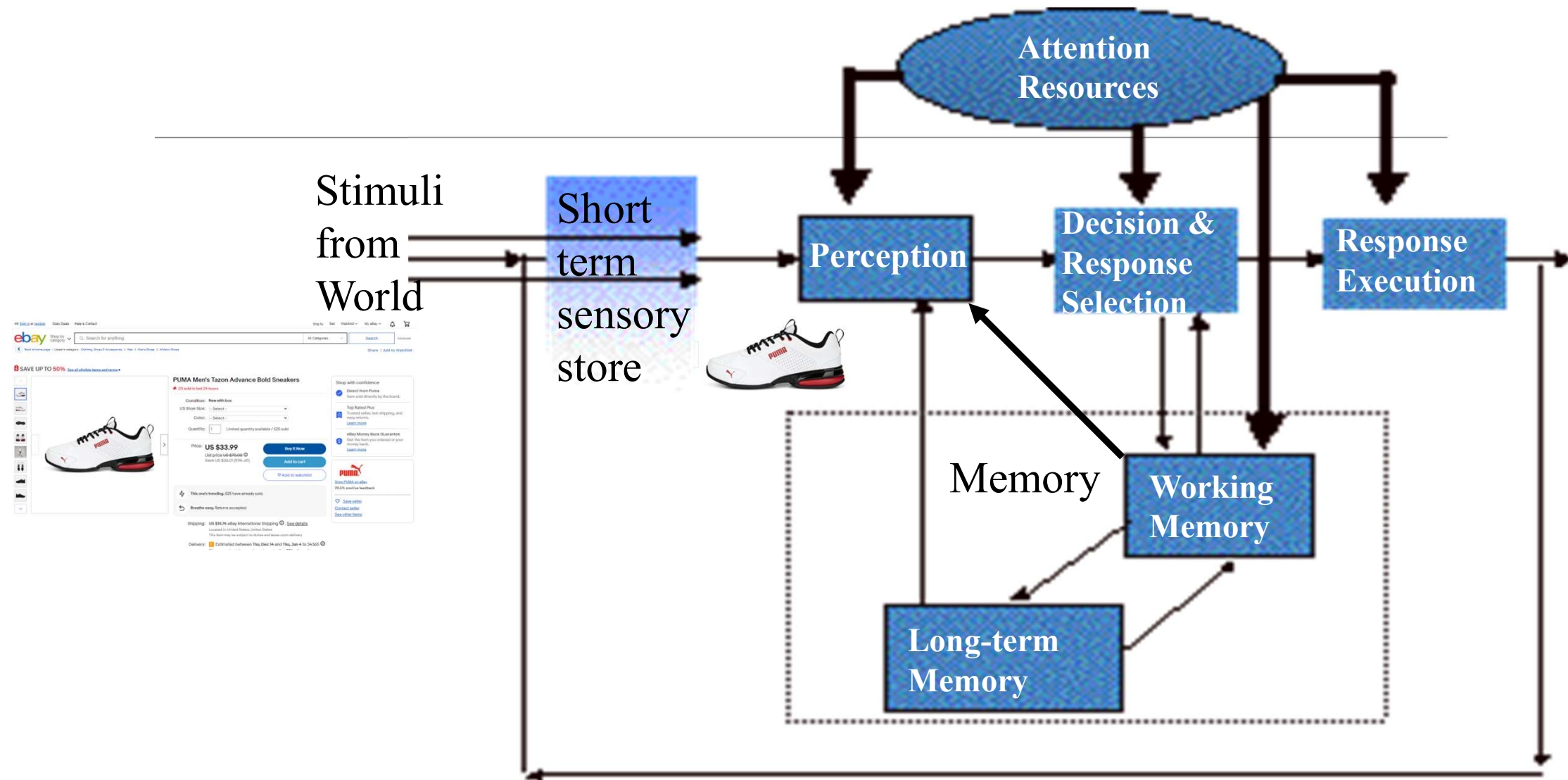
Snowflake for winter or summer?

Decision requires extra Cognitive Processor Effort

Mitsubishi					
Profilo					
Samsung					



Wickens (1992)



Interaction Design-Attention

- Are we multitaskers?

So,

- Your users may miss critical information on your design

Perception and Confusion

- Human perception systems are designed for the **real world**
- They are not designed for **static images on screens**

So?

- Perception is active and interpretative
- Interpretation is based on the visual data (“bottom-up”) and experience (“top-down”)
- You can partly choose the interpretation
- Interpretation of regular stimuli quickly becomes automatic
- Interpretation of irregular stimuli is heavily knowledge-based (e.g. Captcha)


CAPTCHA

- Completely Automated Public Turing test to tell Computers and Humans Apart)
- Security vs Usability

Match the Characters in the Picture [Help](#)


To start resetting your password, type your e-mail address and the characters shown in the picture below. [Why?](#)

E-mail address:

Picture: 

The picture contains 6 characters.

Characters:

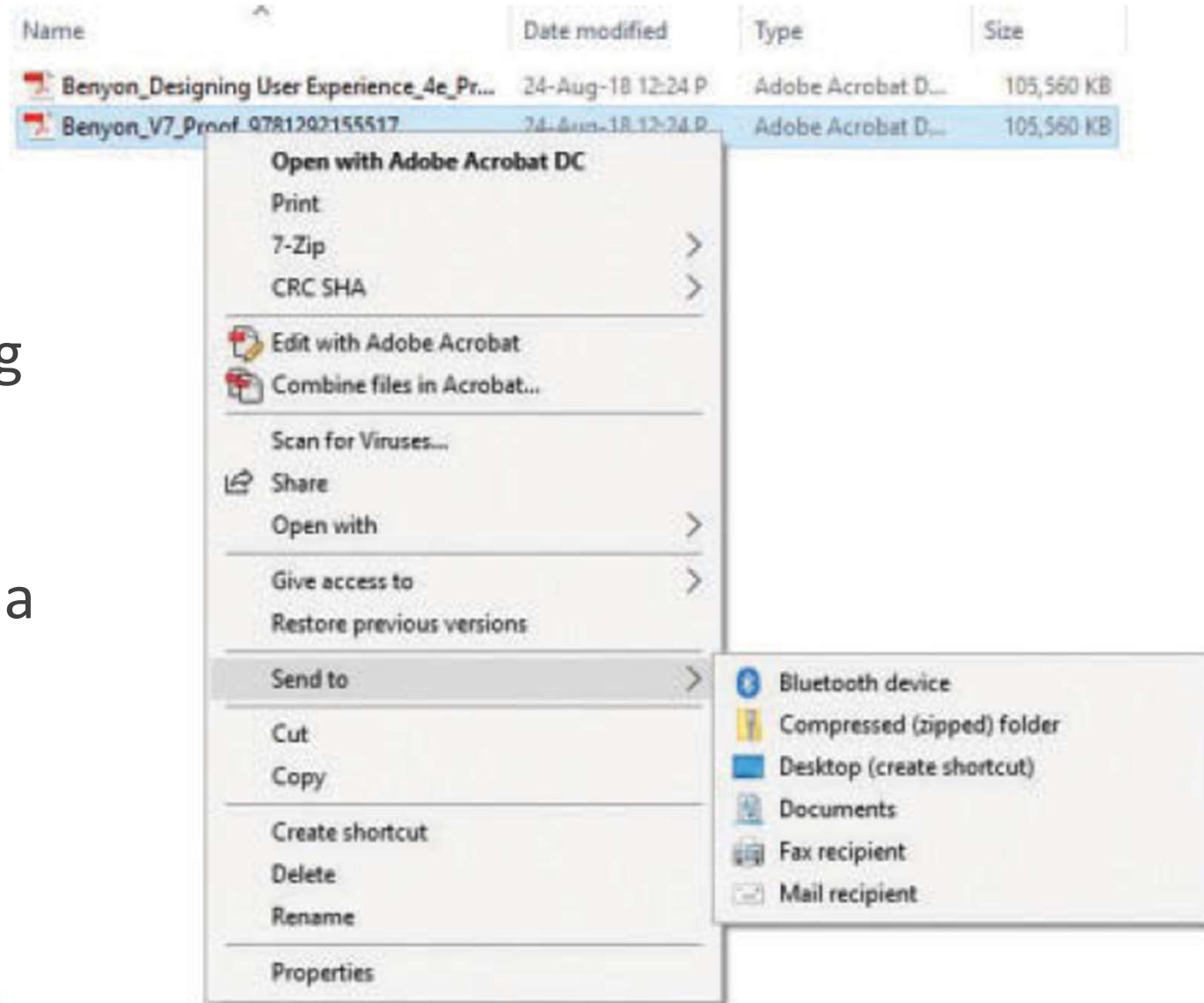
 **Microsoft Passport Network**
Account Services | Privacy Statement | Terms of Use
© 2005 Microsoft Corporation. All rights reserved.

Implications for design:

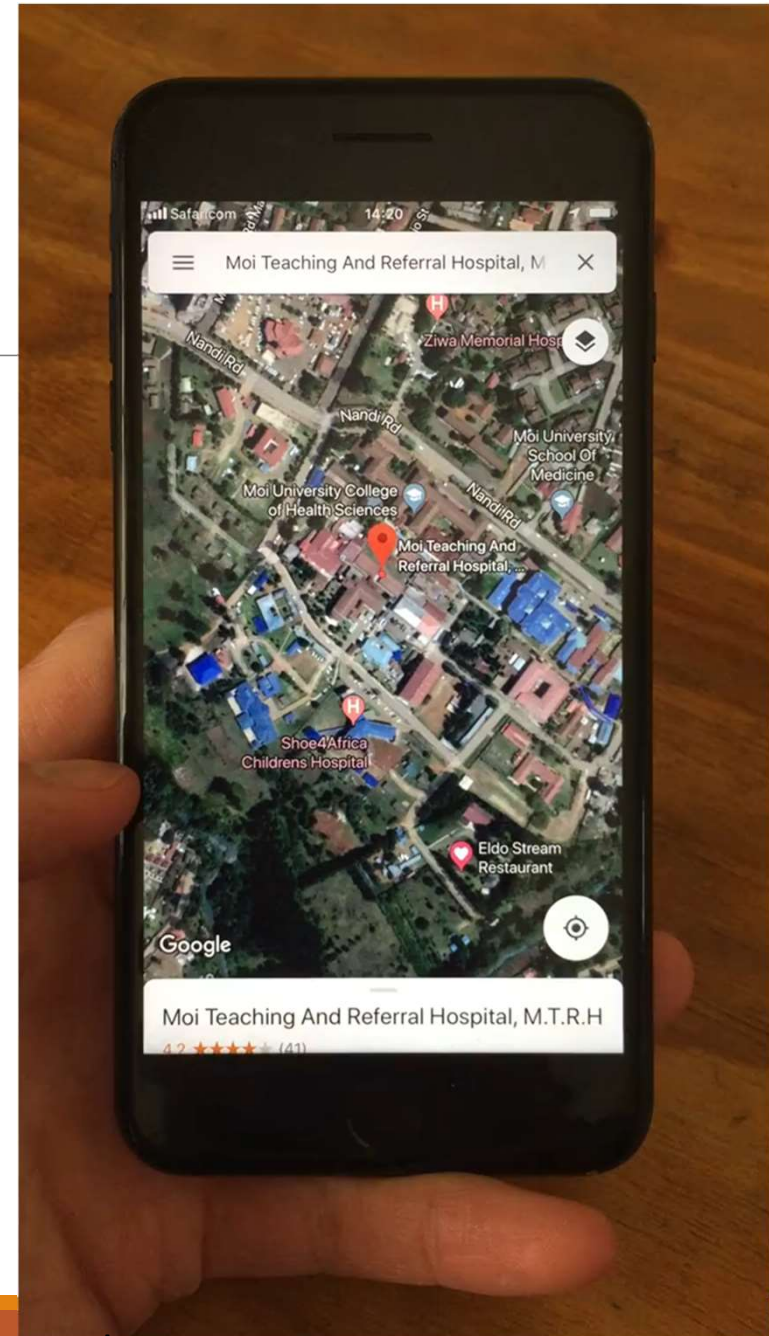
- Designer *never* sees exactly what the user sees
- Experience and repeated use narrow the interpretations of users
- Differences among users can lead to radically different perceptions of the information space

Chunking

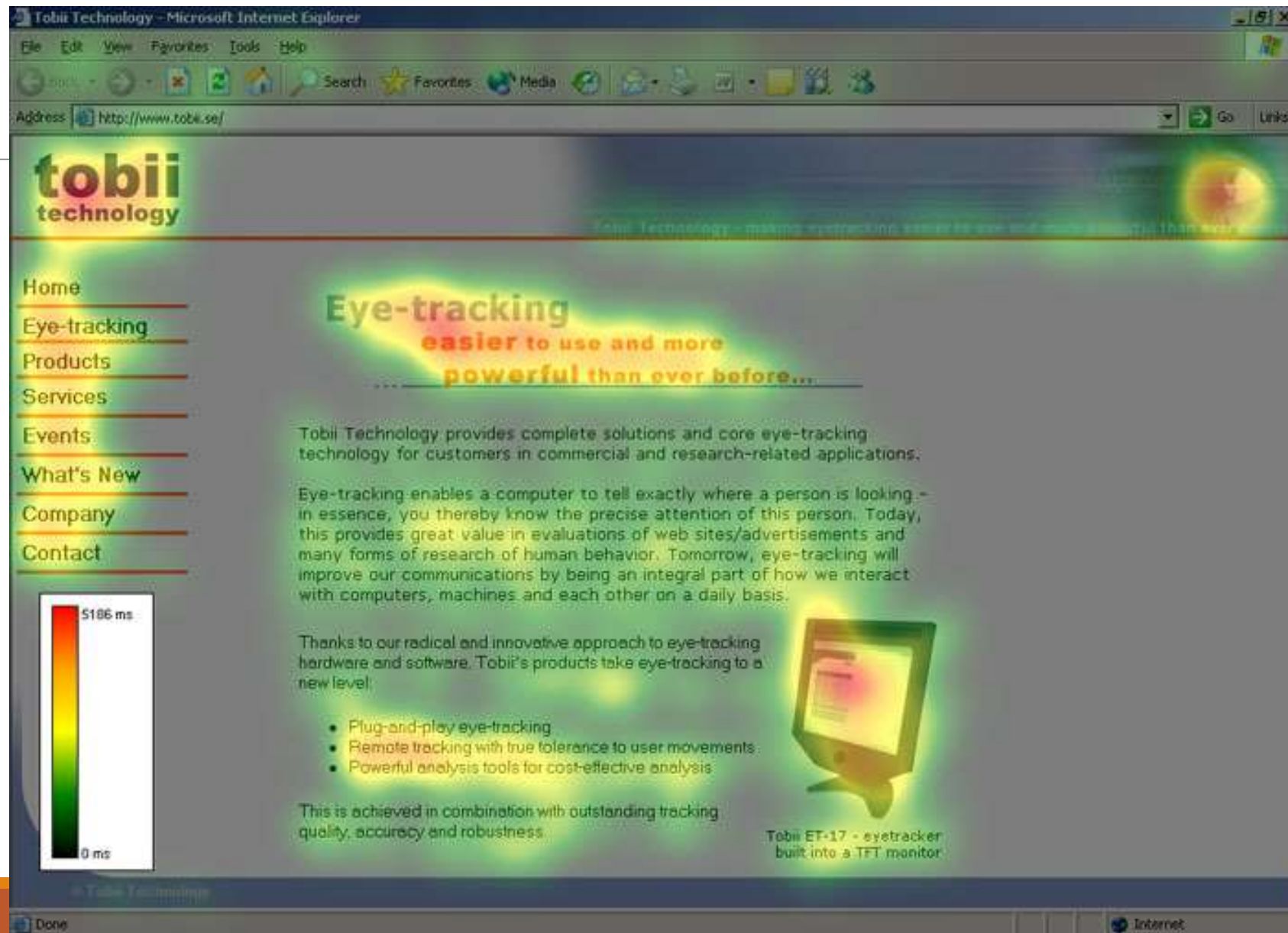
- Chunking is a very effective way of reducing working memory load.
- Example; grouping of meaningful elements of a task into one place (or dialogue).



Chunking Example: Multitask Split Screens



Eye Tracking Results



In HCI terms:

- Layout and structure of screens
 - supports perceptual grouping
 - aids visual scanning
 - aids location
 - affects aesthetics